Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

IN THE CLAIMS:

1. (Currently amended) Lead substitute material for radiation protection purposes in the energy range of an X-ray tube having a voltage of from 60 to 140 kV, comprising a structure of at least two protective layers of different compositions which are separate or joined together, wherein the protective layer(s) more remote from a body being protected comprise(s) predominantly the elements having a lower atomic number, or their compounds, and the protective layer(s) close to the body being protected comprise(s) predominantly the elements having a higher atomic number, or their compounds, wherein for nominal overall lead equivalents of from 0.25 to 2.0 mm the lead substitute material comprises
from 12 to 22 wt. % matrix material,
from 0 to 75 wt. % Sn or Sn compounds,
from 0 to 73 wt. % W or W compounds,
from 0 to 80 wt. % Bi or Bi compounds, and
wherein not more than one of the constituents is
0 wt. %.

2. (Original) Lead substitute material according to claim 1,
characterised in that
the lead substitute material comprises
from 12 to 22 wt. % matrix material,
from 0 to 39 wt. % Sn or Sn compounds,
from 0 to 60 wt. % W or W compounds,
from 0 to 60 wt. % Bi or Bi compounds, and
wherein not more than one of the constituents is
0 wt. %.

3. (Original) Lead substitute material according to claim 2,

characterised in that
the lead substitute material comprises
from 12 to 22 wt. % matrix material,
from 0 to 39 wt. % Sn or Sn compounds,
from 16 to 60 wt. % W or W compounds and
from 16 to 60 wt. % Bi or Bi compounds.

4. (Original) Lead substitute material according to claim 1,
characterised in that
the lead substitute material comprises
from 12 to 22 wt. % matrix material,
from 40 to 60 wt. % Sn or Sn compounds,
from 7 to 15 wt. % W or W compounds and
from 7 to 15 wt. % Bi or Bi compounds.

5. (Previously presented) Lead substitute material according to claim 1,
characterised in that
the lead substitute material additionally comprises up to 40 wt. % of one or more of the following elements:
Er, Ho, Dy, Tb, Gd, Eu, Sm, La, Ce, Nd, Cs, Ba, I, Pr and/or their compounds and/or CsI.

6. (Original) Lead substitute material according to claim 5,
characterised in that
the lead substitute material additionally comprises up to 20 wt. % of one or more of the following elements:
Er, Ho, Dy, Tb, Gd, Eu, Sm, La, Ce, Nd, Cs, Ba, I, Pr and/or their compounds and/or CsI.

7. (Original) Lead substitute material according to claim 6,
characterised in that

the lead substitute material additionally comprises up to 8 wt. % of one or more of the following elements:
Er, Ho, Dy, Tb, Gd, Eu, Sm, La, Ce, Nd, Cs, Ba, I, Pr and/or their compounds and/or CsI.

8. (Previously presented) Lead substitute material according to claim 1,
characterised in that
the lead substitute material additionally comprises up to 40 wt. % of one or more of the following elements:
Ta, Hf, Lu, Yb, Tm, Th, U and/or their compounds.

9. (Original) Lead substitute material according to claim 8,
characterised in that
the lead substitute material additionally comprises up to 20 wt. % of one or more of the following elements:
Ta, Hf, Lu, Yb, Tm, Th, U and/or their compounds.

10. (Original) Lead substitute material according to claim 9,
characterised in that
the lead substitute material additionally comprises up to 8 wt. % of one or more of the following elements:
Ta, Hf, Lu, Yb, Tm, Th, U and/or their compounds.

11. (Previously presented) Lead substitute material for radiation protection purposes in the energy range of an X-ray tube having a voltage of from 60 to 90 kV according to claim 5, characterised in that
for nominal overall lead equivalents of from 0.25 to 0.6 mm the lead substitute material comprises
from 12 to 22 wt. % matrix material,
from 49 to 65 wt. % Sn or Sn compounds,
from 0 to 20 wt. % W or W compounds,

from 0 to 20 wt. % Bi or Bi compounds and
from 2 to 35 wt. % of one or more of the elements Gd,
Eu, Sm, La, Ce, Nd, Cs, Ba, I, Pr and/or their compounds and/or CsI.

12. (Original) Lead substitute material according to claim 11,
characterised in that
the lead substitute material additionally comprises from 2 to 25 wt. % I, Cs, Ba, La, Ce, Pr and/or Nd and/or their compounds and/or CsI.

13. (Previously presented) Lead substitute material for radiation protection purposes in the energy range of an X-ray tube having a voltage of from 100 to 140 kV according to claim 5, characterised in that
for nominal overall lead equivalents of from 0.25 to 0.6 mm the lead substitute material comprises
from 12 to 22 wt. % matrix material,
from 40 to 73 wt. % Bi and/or W or their compounds and
from 5 to 38 wt. % of one or more of the following
elements: Gd, Eu, Er, Hf and/or their compounds.

14. (Canceled)

15. (Canceled)

16. (Currently amended) Lead substitute material according to claim ~~14~~ 1,
characterised in that
it comprises a structure of at least two protective layers of different compositions which are separate or joined together, wherein at least in one layer at least 50% of the total weight consists of only one element from the group Sn, W and Bi or their compounds.

17. (Currently amended) Lead substitute material according to claim ~~14~~ 1,

characterised in that
it comprises a structure of at least two protective layers of different compositions which are separate or joined together, wherein at least in one layer at least 50% of the total weight consists only of at least 40 wt. % Sn or its compounds and at least 10 wt. % I, Cs, Ba, La, Ce, Pr and/or Nd and/or their compounds and/or CsI.

18. (Currently amended) Lead substitute material according to claim ~~14~~ 1,
characterised in that
it comprises a structure of at least two protective layers of different compositions which are separate or joined together, wherein the protective layer(s) more remote from the body comprise(s) predominantly the elements or their compounds having a higher X-ray fluorescent yield, and the protective layer(s) close to the body comprise(s) the elements or their compounds having a lower X-ray fluorescent yield.

19. (Currently amended) Lead substitute material according to claim ~~14~~ 1,
characterised in that
it comprises a structure of at least three protective layers of different cmpositions which are separate or joined together, wherein the protective layer(s) more remote from the body and the protective layer(s) close to the body comprise predominantly the elements having a higher atomic number or their compounds, and there is arranged in the middle at least one protective layer comprising predominantly elements having a lower atomic number.

20. (Currently amended) Lead substitute material according to claim ~~14~~ 1,
characterised in that
a weakly radioactive layer is embedded between two non-radioactive protective layers which are separate from or joined to the radioactive layer.

21. (Previously presented) Lead substitute material according to claim 1,
characterised in that

the metals or metal compounds are granular and their particle sizes exhibit a 50^{th} percentile according to the following formula

$$D_{50} = \frac{d \cdot p}{10} mm$$

wherein

D_{50} represents the 50^{th} percentile of the particular size distribution,

d represents the layer thickness in mm and

p represents the proportion by weight of the particle material component in the total weight,

and the 90^{th} percentile of the particle size distribution $D_{90} \leq 2 \cdot D_{50}$.

22. (Previously presented) Radiation protection apron of lead substitute material according to claim 1.